Force Protection C^2

NEW HORIZONS SYMPOSIUM

13 - 14 November 1997

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Vision & Mission

- **Force Protection C2 SPO Mission**
  - **Acquire and Deliver Quality Command and Control Systems to Provide Force Protection to Warfighting Resources, *and to Government Agencies During Emergencies and Natural Disasters***
- **Force Protection C2 SPO Vision**
  - **World Class Leader in Applying Technology to Force Protection C2 Systems for the Safety, Security and Survivability of US Citizens and Assets Worldwide**

Objectives

- **Develop and Evolve Improved Force Protection System Capabilities in the Areas of Warning, Detection, Assessment, Delay/Denial, and Consequence Management**
- **Develop and Evolve a Joint Force Protection Integrated C2 System Capability for Air and Space Operations**
- **Using PADS and Spiral Development Processes, Deliver DII/COE Compliant Integrated Force Protection Products**
- **Transition of AF Technology Efforts into the Battlelab for Rapid Application by the Air Force Security Forces Center**

The Force Protection Challenge

"Stovepiped" Sensor Info

Coalition/Allied
Sensors
National Sensors
Theater Sensors
Tactical Sensors
Area Sensors

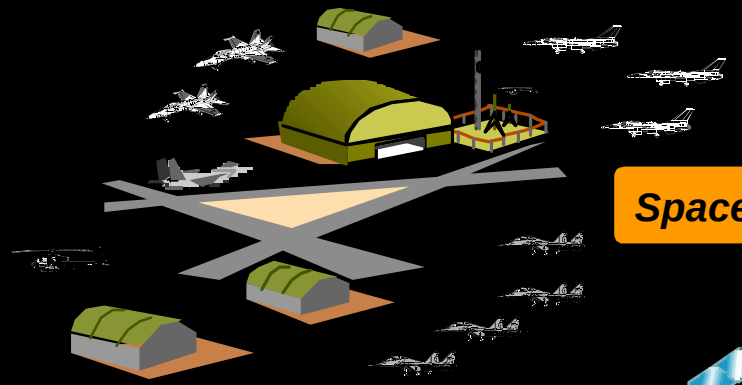
Law Enforcement
Networks
HUMINT Networks
INTEL Networks
INTERPOL Networks
rks

The Threat

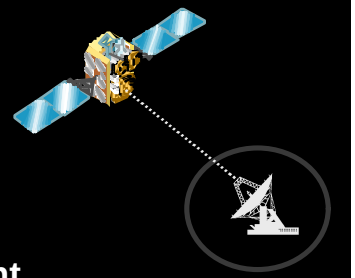
Foreign Countries
Terrorists
Extremists
Kidnappers
Criminals
Others

Infrastructure Sabotage
Lethal Explosives
Nuc/Bio/Chem Weapons
Electronic Weapons
Directed Energy Weapons
Missiles
UAVs
Tunnels
Aircraft
Humans
Vehicles
Letters/Packages

The Base



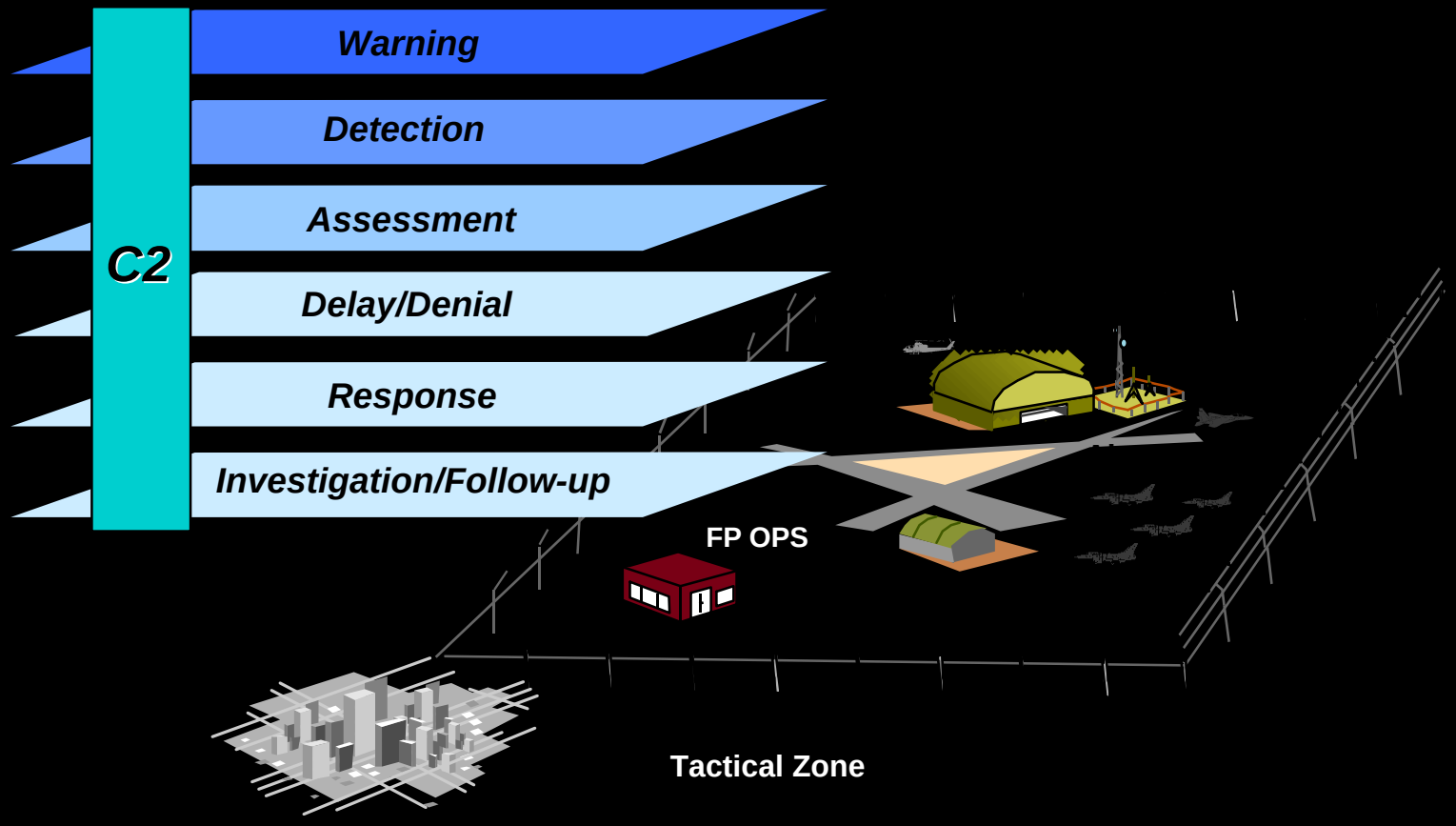
Space Operations



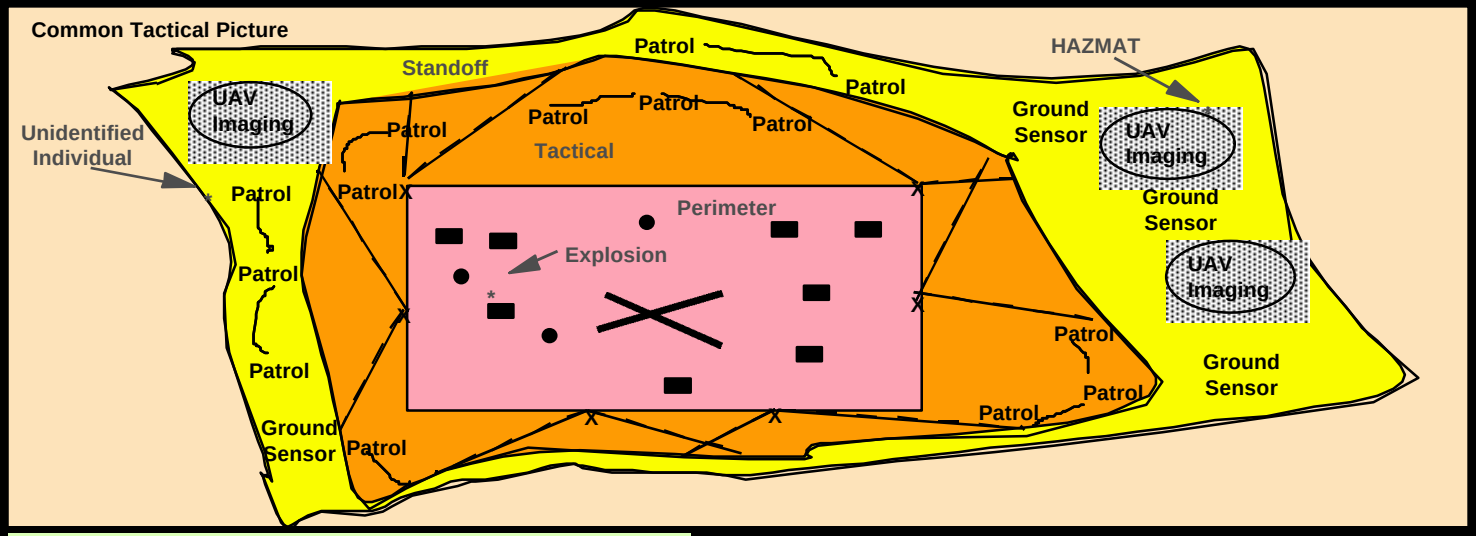
The Protection Functions

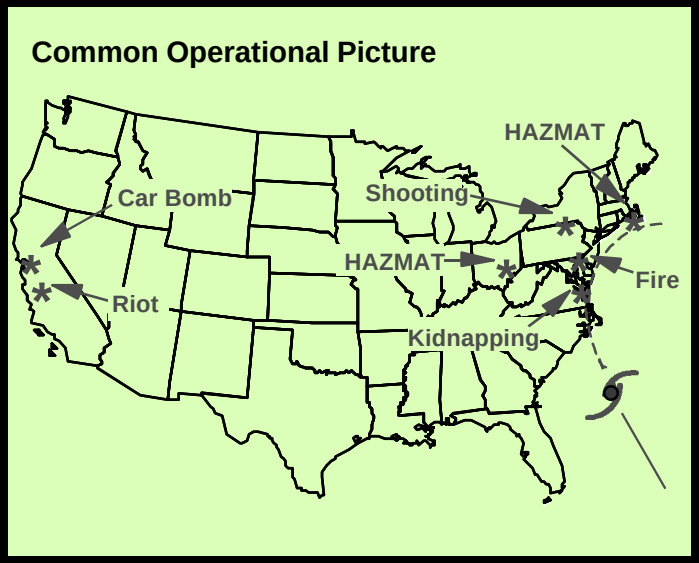
Situation Awareness
Threat Data Base/Threat Assessment
Environment Data Base/Security Assessment
Indications and Warning
Monitoring/Tracking
Detection/Delay/Denial
Consequence Management/C2
Imager, Satellite, Reconnaissance (ISR) Tasking

The Force Protection World
Tactical View



Force Protection World
Common Operational Picture/Common Tactical Picture (COP/CTP)



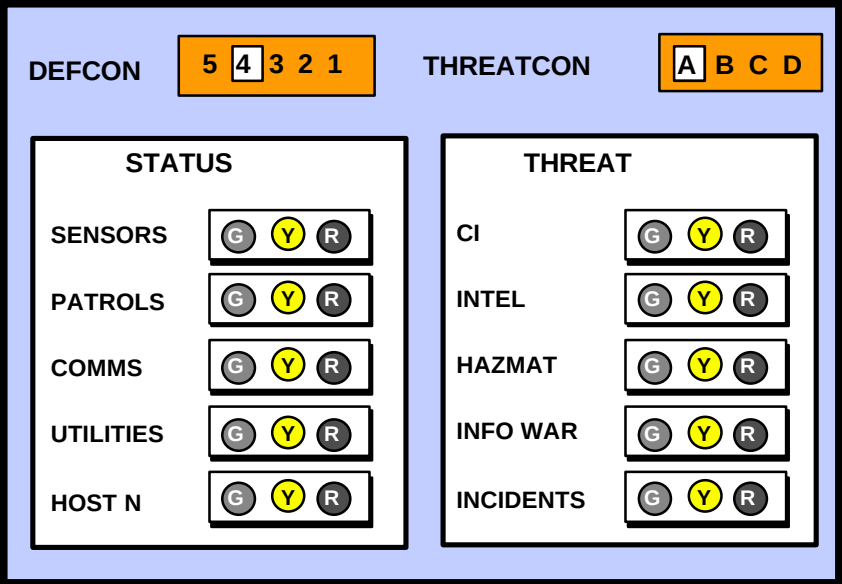


DEFCON 5 **4** 3 2 1

THREATCON **A** B C D

STATUS		THREAT	
SENSORS	G Y R	CI	G Y R
PATROLS	G Y R	INTEL	G Y R
COMMS	G Y R	HAZMAT	G Y R
UTILITIES	G Y R	INFO WAR	G Y R
HOST N	G Y R	INCIDENTS	G Y R

Common Operational Picture Concept
Analyst Workstation Capabilities



Automation

- Rule Based (If - Then)
  - Automatically Change Status Indications
- Message Automation
- Warning Dissemination
  - NBC Attack, Tornados, HAZMAT, Bomb Threat
- Situational Awareness Sharing
  - Upchannel and Downchannel
- Troop Movement Tracking
  - Identification Friend or Foe (IFF)

Information Sources

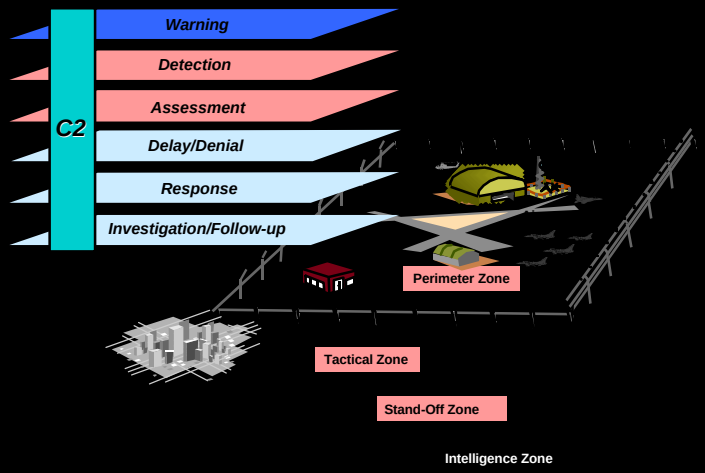
- Explosive Characteristics and Employment
- Critical Infrastructure Status (Grids)
- Contingency Checklists/Action Steps
- Resource Listings - Gov't and Civilian
- Criminal Records
- Criminal Activities Summaries
- Multi-Media Information
- Weather Updates
- Embassy Contacts

Modeling and Simulation

- Predeployment Planning
  - Rehearsals
- Command Post Exercises
- Search for Vulnerabilities
- Response Options for Effectiveness/ Consequences

Fuses Existing Databases

Tactical Automated Security System (TASS)



Description/Objective

- Integrated Portable and Relocatable Security System to provide Force Protection Capability for: Personnel, Dispersed Priority Assets, Fixed Base Facilities and Air Base Ground Defense Applications
- System includes Relocatable and Covert Sensors, Assessment, Alarm Monitoring, Data Communication and Power Equipment
- Radio, Fiber Optic and Wireline Data Communications will be Employed
- Remote Assessment Capability Includes Thermal Imaging Systems

Industry Opportunities

- Contract Ceiling $495M
- Pursue Added/Improved TASS Capabilities
  - Security Sensors
  - RF Communications Networks
    - Army - Size and Weight Reduction
  - Annunciators
  - Thermal Imagers
  - Assessment Devises
- COTS Solutions

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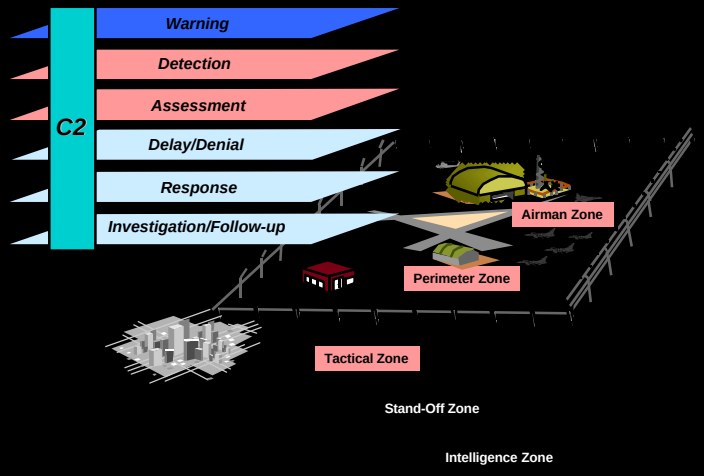
Standard Annunciator Master Plan



Description/Objective

- Next Generation AF Alarm Control and Display System
- Priority A, B, and C and Force Protection Applications
- Single, Scaleable Annunciator
  - Open Architecture/DII COE

Industry Opportunities

- Preparing a Standard Annunciator Roadmap
  - Problem Statement
  - Requirements Generation
  - Potential Solutions
- Qualification Testing
  - First Unit Installation
- Production
  - 12 - 36 Sites
- Technology Insertions

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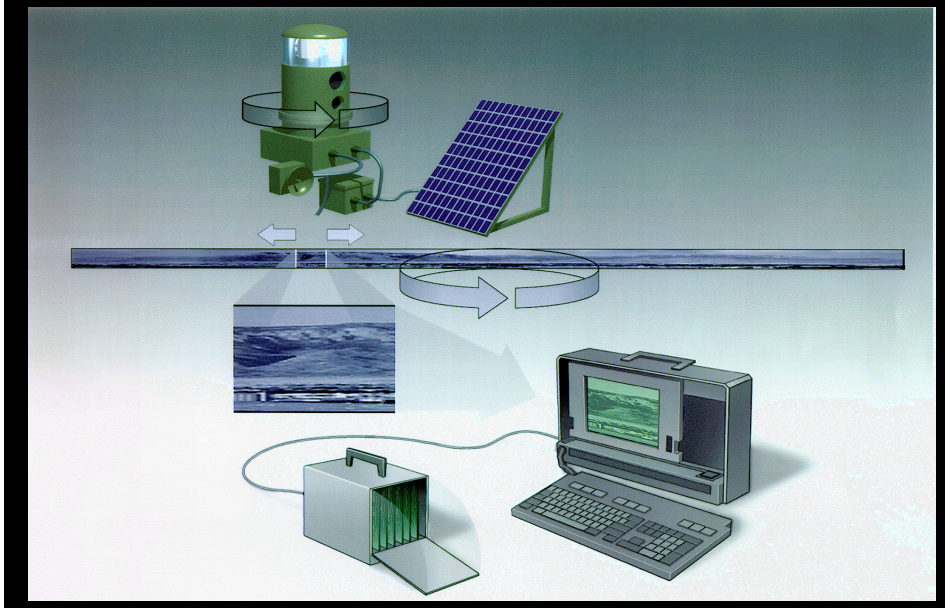
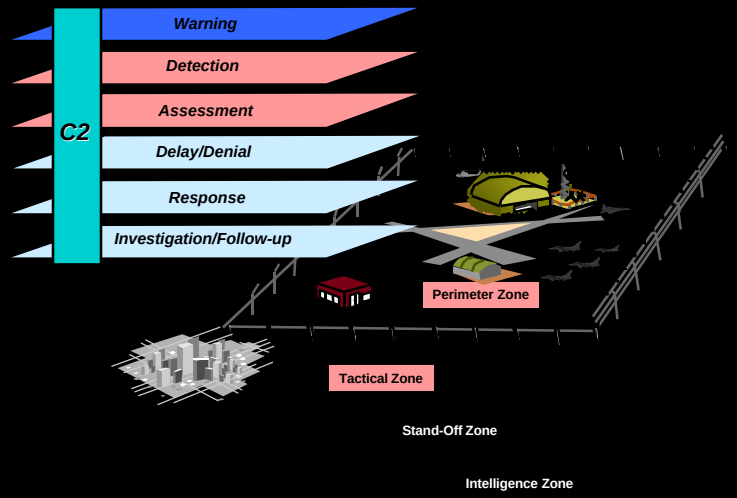
Advanced Exterior Sensor (AES)





Description/Objective

Acquire an Adverse Weather Exterior Capability to Detect, Assess, and Report Intrusions Against USAF Priority Resources Such As Combat Aircraft, Nuclear Weapons and Delivery Systems, and Key C2 Facilities.

Immediate Assessment With Over-the-Fence Capability

Design Goals of Detection of a Crawler at 250m, a Man at 500m, and a Vehicle at 1000m

Industry Opportunities

- First Spiral EMD Contract - Oct 98
- Integration of Low-Cost COTS Devices
  - •IR Sensors
  - •Radar
  - •Visual Array w/VMD
- Integration With TASS Annunciator
- DII-COE Compatible
- Contractor Logistics Supportable

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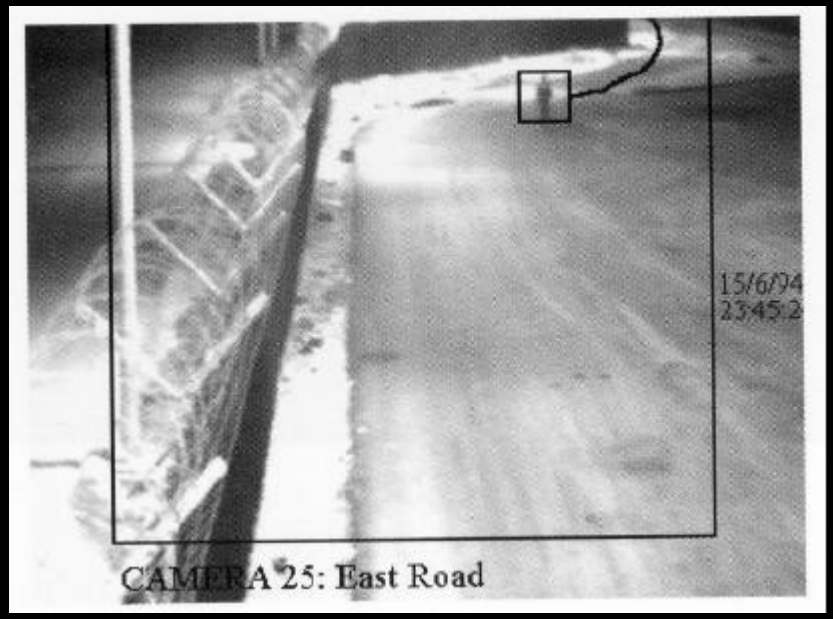
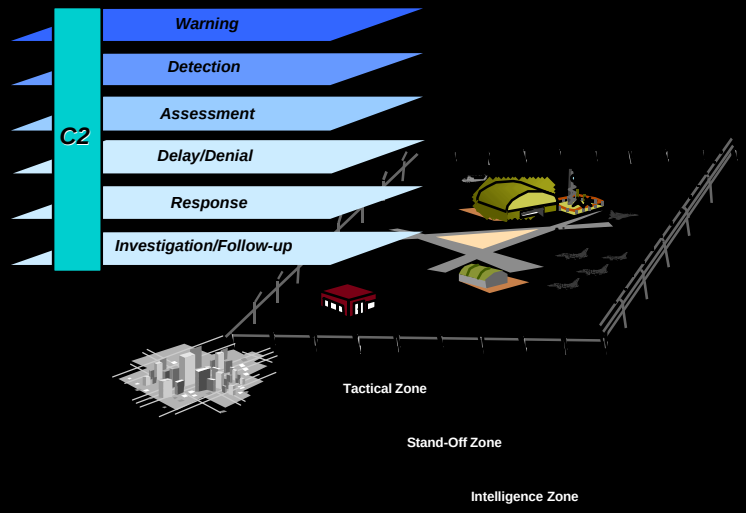
Video Motion Detection (VMD) - Exterior





Description/Objective

- Capability to Scan Areas Within the Tactical Zone and Detect and Track Personnel and Vehicles
- Deploy COTS Motion Detection That Can:
  - Set-up and Define Detection Areas Easily
  - Detect With High Probability of Detection
  - Scan Large Areas and up to 1Km Distant
  - Immune to Environmental Changes Such As Weather and Lighting
  - Integrate With Common Operating Environment

Industry Opportunities

- Demonstration of Systems With Low Infrastructure Cost
- Applicability to Flightline Security Enhancement Program at Multiple Bases
- Demonstrate Interoperability With Deployed Thermal Imagers and Installed CCTV

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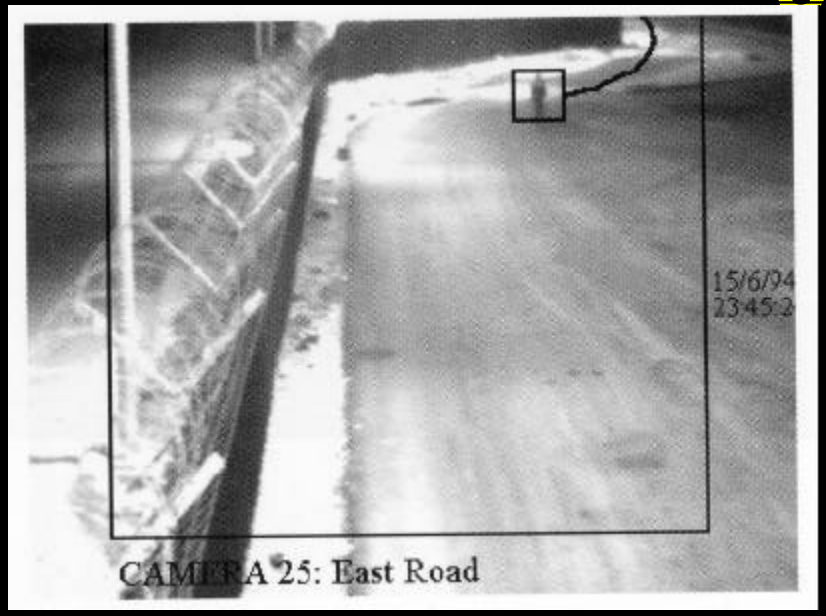
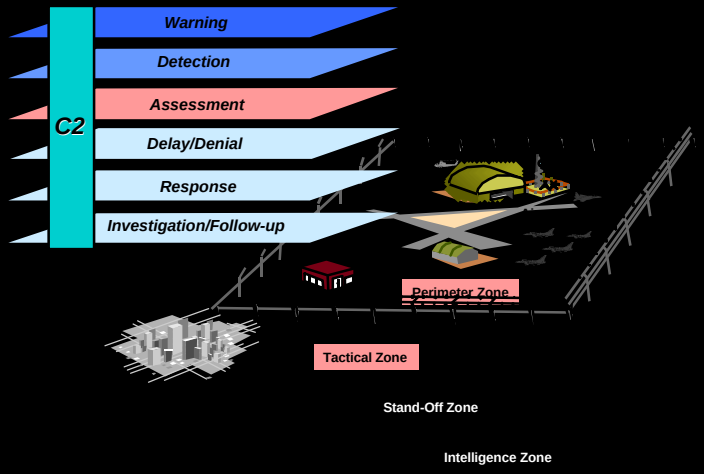
Video Storage System (VSS)



Description/Objective

- Display Stored Scenes/Images Taken Prior To, During and After Alarm Activations
- Allows Operator to View/Assess Stored Images of Each Alarm to Determine Cause



Industry Opportunities

- Provide COTS VSS Solution
- Hardware & Software Package
- No Development - Proven System
- Stand-Alone System
- Interface With Various Annunciators

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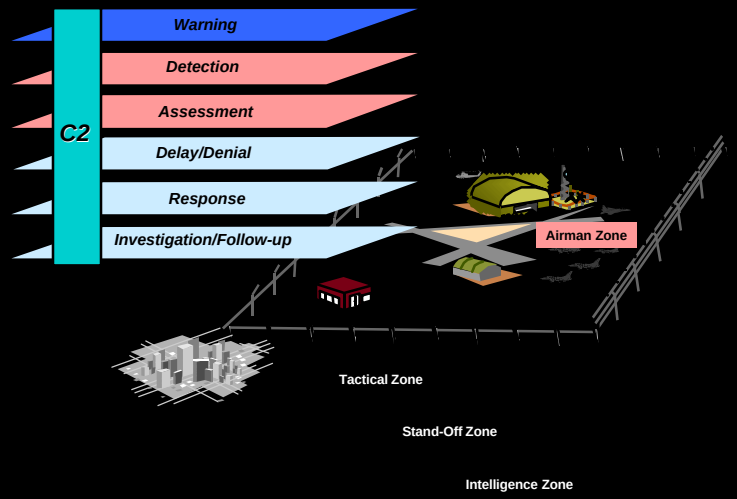
Flightline Security Enhancement (FSEP) Program



Description/Objective

- Enhance Level of Protection for Designated Flightline Aircraft Parking Areas
- Day/Night All-Weather Detection/Assessment Capability
- Economical Low Risk Supportable Advanced Technology
  - Video Motion Detection
  - Wireless Communications Compatible With Flightline Environment.
    - Video & Data Transmission

Industry Opportunities

- Forcasted Funding: $234M
- Schedule: Worldwide Installation at Approximately 150 Bases (FY00-FY04)
- Specific Performance Requirements Are In Development
- COTS Video Motion Detection (VMD) Solution?
  - Scanning Capability To Track Vehicle & Personnel
  - Detection With High Pd Low Nuisance Alarms
- Demonstrate A System With Low Infrastructure Costs
- Other Potential Economical Solutions To Meet Objectives
- Potential Of A Turnkey Contract For System Architecture, Design, Integration & Installation

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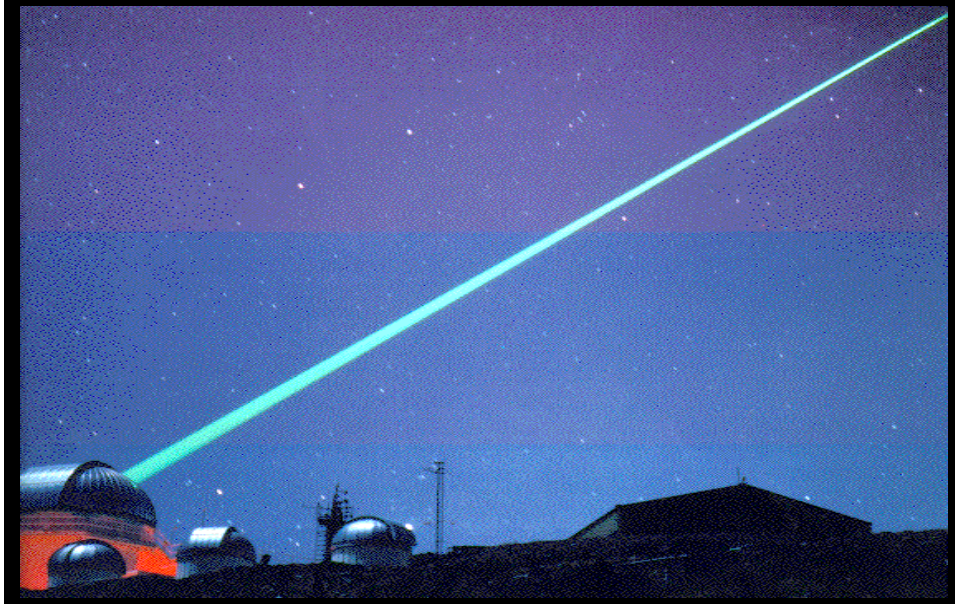
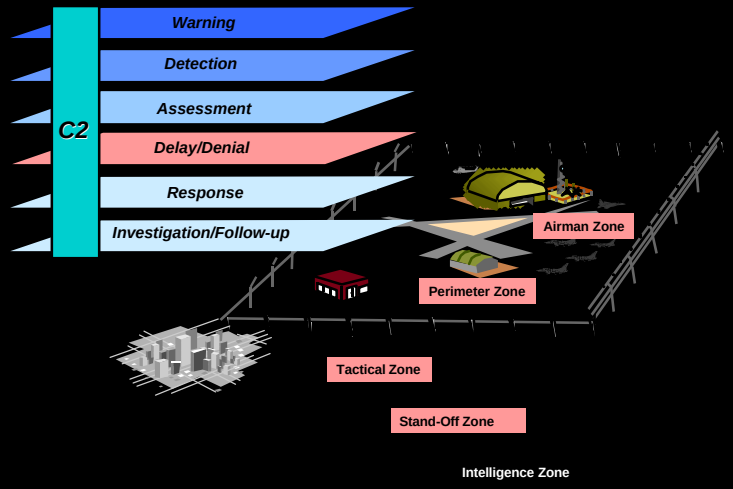
Delay/Denial Systems





Description/Objective

- An Integrated System of Security and Response Devices to Provide a Layered Series of Sensors and Barriers Between a Resource and Uncontrolled Areas
- Barriers Are Both Passive and Active. Existing Technology Will Be Applied First With Advanced Technology Being Phased-In As Available
- Active Barriers Will Produce Incremental Penalties
- Automatic Operation During Normal Mode With Specific Functions Manually Controlled
- High Reliability and Safe Operation

Industry Opportunities

- Inform ESC/FD of Active System Solutions of Varying Phenomenologies (Laser, EO, Radar, Microwave) Providing a Capability for Man-Portable, Vehicle-Mounted or Fixed-Site Installations.
- Demonstrate “Safe’ Operation, Meaning Mission Goals Can Be Met With No Potential for Personal Injury.
- Proposed Solutions Must Be Capable of Fielding by FY 04, Consistent With FYDP Planning.

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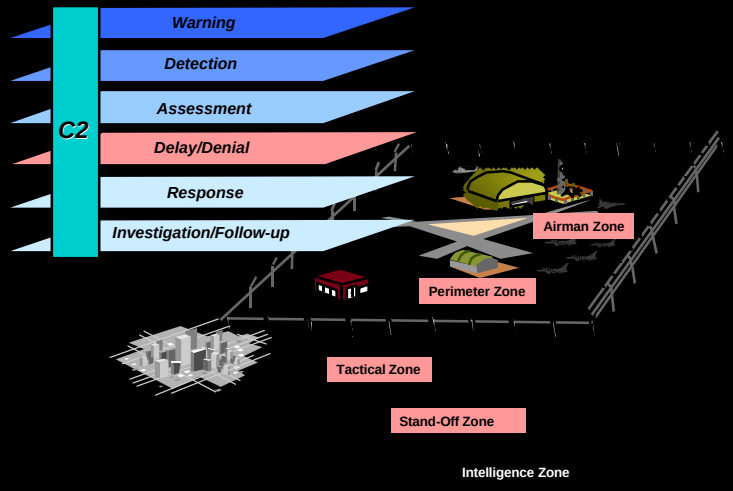
Saber 203



Description/Objective

Objective:

- Acquire a Rifle-Mounted, Glare Producing Laser Illuminator to Delay and Disorient Intruders Approaching High-Valued USAF Assets

Description:

- Compliant With DoD Non-Lethal Policy, International Agreements
- M-203 Launch Tube Mounted Laser With External Trigger; Normal Operation of Weapon Preserved; No Mods
- Eye Safe Laser, Causes Glare/Temporary Impairment in Eyes of Intruder
- Rechargeable Batteries With Recharger

Industry Opportunities

- Propose Alternative Active Laser Solutions Which Enhance Countermeasure Immunity

- Develop Solid-State Diode Lasers of Moderate Power Output (100-200Mw) in the 600-650 Nanometer Region of the Visible Spectrum.

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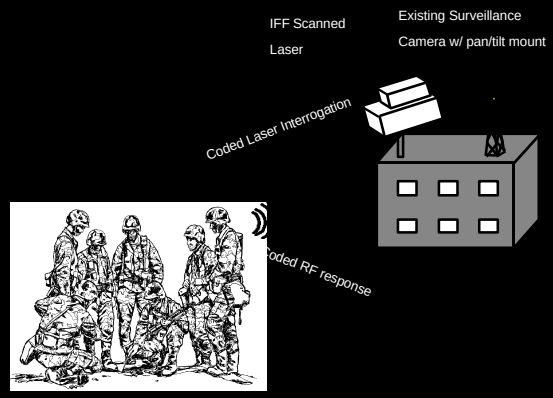
Security Forces Identification Friend/Foe (SFIFF)

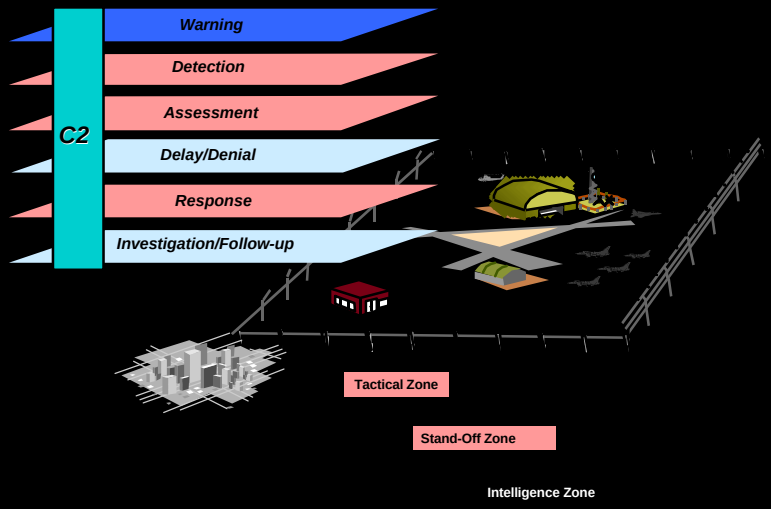
System Description

Security Force IFF

IR Laser Interrogation / RF Response

- *Coded, scanned laser signal is received by all field units 360 deg receiver coverage*
- *Decoded signal activates specified individual response via RF signal back to system*
- *Location of individual is tracked as a result of the scanned laser pointing angle*





Description/Objective

- SFIFF Allows SF to Manually or Automatically Scan and Identify Persons or Vehicles in Restricted Areas. Individually Worn Badges Emit a Coded RF Response When Challenged
  - Flightline SFIFF Mounts on TASS's Pan-Tilt WSTI
    - Displays Individual or Vehicle ID Onto WSTI Monitor
    - Designed to Be Used Manually or With VMD IDS
  - Deployment SFIFF Is a Hand Held or Weapon-Mountable Laser for Dismounted SF Clearance/Tactical Operations
  - SFIFF Is to Be Compatible With Army IFF

Industry Opportunities

- Designed to Meet Air Force, Joint Service, Federal and Civilian Requirements and Other Large Coverage Locations
- Design-To-Cost Requirement
  - Approx. $500 Per Individual Transmitter
  - $25K Per Base Station
  - Will Support Commercialization
- Automated Recognition and Tracking Are Synergistic When Integrated With the Latest Generation of Commercial Video Motion Detection Systems

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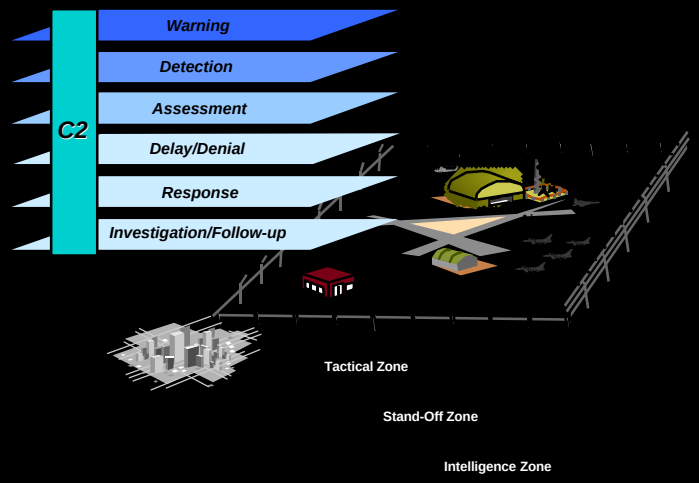

C^2 Functions

Functions / Zones	Warning	Detection	Assessment	Delay/ Denial	Response	Investigation/ Follow-up
Airman		STD Annun FSEP	VMD FSEP VSS	D/D		
Perimeter	AES	TASS STD Annun	VMD VSS	D/D		
Tactical	AES	TASS STD Annun IFF	VMD IFF VSS	D/D	IFF	
Tactical Stand-Off	AES	TASS IFF	IFF	D/D	IFF	
Intelligence						